

REMARKS

The final Office Action dated September 29, 2003 has been carefully considered. Claims 1, 2, 6, and 15 were and are now pending in the application, with claims 3, 7, and 11-14 withdrawn from consideration.

The Examiner is sincerely thanked for considering Applicants' arguments in Applicants' September 10 Amendment and Reply.

Claim Rejections

In the Office Action, claims 1 and 2 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,147,191 to Crowther (hereinafter "Crowther"). Claim 15 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Crowther in view of the combination of U.S. Patent Nos. 3,917,768 to Abate-Daga et al. (hereinafter "Abate-Daga") and 4,671,927 to Alsop (hereinafter "Alsop"). Claim 6 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Crowther with Abate-Daga and Alsop, and further in view of U.S. Patent No. 5,524,033 to Hida et al. (hereinafter "Hida"). Applicants respectfully traverse these rejections for at least the following reasons.

Claim 1 recites that a ratio (B / S) of the width (B) of the control rod blades to a surface area (S) of a square having sides each being equal to the pitch between the fuel assemblies is set in a range of 0.06 to 0.08 cm^{-1} . None of the cited references teaches, suggests, or discloses this feature.

On page 3 of the Office Action, the PTO states that Crowther discloses "a pitch (A) between fuel assemblies of approximately 5.125 inches (13.02 cm). See column 19, lines 3+." Applicants respectfully disagree. The mentioned passage in Crowther actually discloses "fuel assemblies within stainless steel flow channels each having... an outside width of 5.125 inches...". However, as understood by one of ordinary skill in the art, the outside width of flow channels is not the same as pitch, which also includes: half of the thickness of the control rod, the gap between the control rod and the flow channel, and half of the distance between adjacent flow channels (that are not separated by control rods). See, e.g., pitch (A) depicted in Fig. 1 of the present application.

In col. 12, lines 1-17, Crowther discloses that "assemblies are arranged in square groups of four spaced 0.392 inch between adjacent flow channel surfaces... [and] The

various groups of four assemblies are spaced 0.75 inch from adjacent groups forming the... regions within which 80 cruciform control poison elements are reciprocable." (Emphasis added.) Thus, Crowther discloses, at minimum, a fuel assembly pitch (A) of: 5.125 inch + $\frac{1}{2}$ (0.392 inch) + $\frac{1}{2}$ (0.75 inch) = 5.696 inch = 14.47 cm. Because Crowther discloses that B = 4.87 inch = 12.37 cm, Crowther also discloses $B / S = B / A^2 = (12.37 \text{ cm}) / (14.47 \text{ cm})^2 = 0.0591 \text{ cm}^{-1}$, which is less than the claimed range of 0.06 to 0.08 cm^{-1} .

Crowther does not teach, suggest, or disclose that a ratio (B / S) of the width (B) of the control rod blades to a surface area (S) of a square having sides each being equal to the pitch between the fuel assemblies is set in a range of 0.06 to 0.08 cm^{-1} . None of the other cited references cures the deficiencies of Crowther. Thus, independent claim 1, and all claims dependent therefrom, are believed to be patentable over the cited references. Withdrawal of the rejections is respectfully requested.

Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

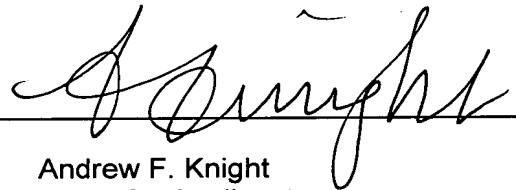
Respectfully submitted,

Date

12/3/03

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